

Sub Q' WHAT IS CLAIMED IS:

1. An object-region-data describing method for describing object region data relating to a time-series variation of an object region in video data including a plurality of frames, the method comprising:
 - 5 specifying at least one of object regions as a reference object region;
 - 10 obtaining a conversion parameter representing conversion from the reference object region into an object region of a target object; and
 - 15 describing the object region data using the conversion parameter and information on said reference object region.
2. An object-region-data describing method for describing object region data relating to a time-series variation of an object region in video data including a plurality of frames, the method comprising:
 - 20 specifying at least one of object regions as a reference object region;
 - 25 obtaining a conversion parameter representing conversion from the reference object region into an object region of a target object;
 - 30 approximating a time-series variation of the conversion parameter by an approximate function; and
 - 35 describing the object region data using an approximate function parameter identifying the approximate function and information on said reference

object region.

3. The method according to claim 1, wherein
said information on said reference object region
is bit map information.

5 4. The method according to claim 2, wherein
said information on said reference object region
is bit map information.

10 5. An object-region-data describing method for
describing object region data relating to a time-series
variation of an object region in video data including
a plurality of frames, the method comprising:

specifying at least one of object regions as
a reference object region;

15 obtaining a conversion parameter representing
conversion from a representative point of an
approximate figure of the reference object region into
a representative point of an approximate figure of
an object region of a target object; and

20 describing the object region data using the
conversion parameter and information on the representa-
tive point of the approximate figure of the reference
object region.

25 6. An object-region-data describing method for
describing object region data relating to a time-series
variation of an object region in video data including
a plurality of frames, the method comprising:

specifying at least one of object regions as

a reference object region;

obtaining a conversion parameter representing conversion from a representative point of an approximate figure of the reference object region into a representative point of an approximate figure of an object region of a target object;

approximating a time-series variation of the conversion parameter by an approximate function; and

describing the object region data using an approximate function parameter identifying the approximate function and information on the representative point of the approximate figure of the reference object region.

7. The method according to claim 1, further comprising updating the reference object region such that an error between a predicted object region obtained based on the conversion parameter and an actual object region of said target object is minimum.

8. The method according to claim 2, further comprising updating the reference object region such that an error between a predicted object region obtained based on the conversion parameter and an actual object region of said target object is minimum.

9. The method according to claim 5, further comprising updating the reference object region such that an error between a predicted object region obtained based on the conversion parameter and an

actual object region of said target object is minimum.

10. The method according to claim 6, further comprising updating the reference object region such that an error between a predicted object region obtained based on the conversion parameter and an actual object region of said target object is minimum.

11. The method according to claim 1, wherein said reference object region is an object region in a center frame among a plurality of successive frames in which said object region of said target object exists.

12. The method according to claim 2, wherein said reference object region is an object region in a center frame among a plurality of successive frames in which said object region of said target object exists.

13. The method according to claim 5, wherein said reference object region is an object region in a center frame among a plurality of successive frames in which said object region of said target object exists.

20. The method according to claim 6, wherein said reference object region is an object region in a center frame among a plurality of successive frames in which said object region of said target object exists.

25. The method according to claim 1, wherein said conversion parameter is obtained based on the reference object region for a given frame following a frame including the reference object region, and if an error between a predicted object region obtained based on

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the conversion parameter and an actual object region of said target object exceeds a threshold value, the reference object region is updated by an object region in the given frame.

5 16. The method according to claim 2, wherein said conversion parameter is obtained based on the reference object region for a given frame following a frame including the reference object region, and if an error between a predicted object region obtained based on the
10 conversion parameter and an actual object region of said target object exceeds a threshold value, the reference object region is updated by an object region in the given frame.

15 17. The method according to claim 5, wherein said conversion parameter is obtained based on the reference object region for a given frame following a frame including the reference object region, and if an error between a predicted object region obtained based on the conversion parameter and an actual object region of
20 said target object exceeds a threshold value, the reference object region is updated by an object region in the given frame.

25 18. The method according to claim 6, wherein said conversion parameter is obtained based on the reference object region for a given frame following a frame including the reference object region, and if an error between a predicted object region obtained based on

the conversion parameter and an actual object region of said target object exceeds a threshold value, the reference object region is updated by an object region in the given frame.

5 19. The method according to one of claim 1, wherein said conversion parameter is recursively obtained for such frames preceding and succeeding to a center frame among a plurality of successive frames in which said target object region exists that an error
10 between a predicted object region obtained based on the conversion parameter and an actual object region of said target object exceeds a threshold value.

15 20. The method according to one of claim 2, wherein said conversion parameter is recursively obtained for such frames preceding and succeeding to a center frame among a plurality of successive frames in which said target object region exists that an error between a predicted object region obtained based on the conversion parameter and an actual object region of said target object exceeds a threshold value.
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25 21. The method according to one of claim 5, wherein said conversion parameter is recursively obtained for such frames preceding and succeeding to a center frame among a plurality of successive frames in which said target object region exists that an error between a predicted object region obtained based on the conversion parameter and an actual object region of

said target object exceeds a threshold value.

22. The method according to one of claim 6,
wherein said conversion parameter is recursively
obtained for such frames preceding and succeeding to
5 a center frame among a plurality of successive frames
in which said target object region exists that an error
between a predicted object region obtained based on
the conversion parameter and an actual object region
of said target object exceeds a threshold value.

10 23. The method according to claim 1, wherein
the object region of said target object is divided
into a plurality of subregions; and
the conversion parameter is respectively obtained
for each of said subregions.

15 24. The method according to claim 2, wherein
the object region of said target object is divided
into a plurality of subregions; and
the conversion parameter is respectively obtained
for each of said subregions.

20 25. The method according to claim 5, wherein
the object region of said target object is divided
into a plurality of subregions; and
the conversion parameter is respectively obtained
for each of said subregions.

25 26. The method according to claim 6, wherein
the object region of said target object is divided
into a plurality of subregions; and

the conversion parameter is respectively obtained for each of said subregions.

27. The method according to claim 1, further comprising describing either related information 5 related to the object region of said target object or information indicating a method of accessing the related information.

28. The method according to claim 2, further comprising describing either related information 10 related to the object region of said target object or information indicating a method of accessing the related information.

29. The method according to claim 5, further comprising describing either related information 15 related to the object region of said target object or information indicating a method of accessing the related information.

30. The method according to claim 6, further comprising describing either related information 20 related to the object region of said target object or information indicating a method of accessing the related information.

31. A computer readable recording medium storing 25 object region data comprising a first data region storing information identifying a first frame and a last frame of a plurality of frames including an object region in video data, a second data region

for storing information identifying the object region
in a predetermined frame among the plurality of frames,
and a third data region for storing information
relating to conversion from the object region in the
predetermined frame into an object region in another
frame.

32. A video processing method for determining
whether a predetermined object is specified or not on
an image screen displaying video data by using object
region data in which a time-series variation of an
object region in video data including a plurality of
frames is described by using a conversion parameter
representing conversion from a reference object region
into an object region of a target object, the method
comprising:

acquiring said conversion parameter from said
object region data relating to the predetermined object
when a predetermined position is specified on the image
screen displaying said video data;

inversely converting a specified predetermined
position into a position in a frame in which said
reference object region exists by using said conversion
parameter; and

determining whether or not the position obtained
by inverse conversion exists inside of said reference
object region, and determining whether said
predetermined object has been specified when it is

determined that the position exists inside of said reference object region.

33. The method according to claim 32, further comprising presenting related information related to
5 a specified object.

34. An object-region-data describing apparatus for
describing object region data relating to a time-series
variation of an object region in video data including
a plurality of frames, the apparatus comprising:
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a processor configured to specify at least one of
object regions as a reference object region;

a processor configured to obtain a conversion
parameter representing conversion from the reference
object region into an object region of a target object;
15 and

a processor configured to describe the object
region data using the conversion parameter and
information on said reference object region.

35. An object-region-data describing apparatus for
describing object region data relating to a time-series
variation of an object region in video data including
a plurality of frames, the apparatus comprising:
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a processor configured to specify at least one of
object regions as a reference object region;

a processor configured to obtain a conversion
parameter representing conversion from the reference
object region into an object region of a target object;
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a processor configured to approximate a time-series variation of the conversion parameter by an approximate function; and

5 a processor configured to describe the object region data using an approximate function parameter identifying the approximate function and information on said reference object region.

36. A video processing apparatus for determining whether a predetermined object is specified or not on an image screen displaying video data by using object region data in which a time-series variation of an object region in video data including a plurality of frames is described by using a conversion parameter representing conversion from a reference object region 10 into an object region of a target object, the apparatus comprising:

20 a processor configured to acquire said conversion parameter from said object region data relating to the predetermined object when a predetermined position is specified on the image screen displaying said video data;

25 a processor configured to inversely convert a specified predetermined position into a position in a frame in which said reference object region exists by using said conversion parameter; and

 a processor configured to determine whether or not the position obtained by inverse conversion exists

inside of said reference object region, and determine whether said predetermined object has been specified when it is determined that the position exists inside of said reference object region.

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